IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

MISUMI et al.

Application No. 09/848,256

Art Unit: 2811

Filed: May 4, 2001

Examiner: L. Thai

For: SEALED SEMICONDUCTOR DEVICE AND LEAD FRAME USED FOR THE SAME

PENDING CLAIMS AFTER AMENDMENTS MADE IN RESPONSE TO OFFICE ACTION DATED OCTOBER 4, 2002

Claim 10. A sealed semiconductor device comprising:

a semiconductor chip;

a lead frame including internal leads, a plurality of said internal leads extending across part of and spaced from a surface of said semiconductor chip; and

a die pad separate from and not connected to said lead frame and on which said semiconductor chip is mounted, wherein at least one of said internal leads extends substantially perpendicular to and contacts said die pad.

Claim 11. A sealed semiconductor device comprising:

a semiconductor chip;

a lead frame including internal leads extending across part of and spaced from a surface of said semiconductor chip, and

a die pad separate from and not connected to said lead frame and on which said semiconductor chip is mounted, said die pad including fixed protrusions extending toward and contacting some of said internal leads.

Claim 17. The sealed semiconductor device according to claim 10, wherein said at least one internal lead perpendicular to and contacting said die pad is peripheral to and does not contact said semiconductor chip.

Claim 18. The lead frame according to claim 10, wherein said die pad is substantially rectangular and includes a pair of longer sides and a pair of shorter sides and said at least one

internal lead perpendicular to and contacting said die pad extends proximate the pair of longer sides of said die pad.

Claim 19. The lead frame according to claim 10, wherein said die pad is substantially rectangular and includes a pair of longer sides and a pair of shorter sides and said at least one internal lead perpendicular to and contacting said die pad extends proximate the pair of shorter sides of said die pad.

Claim 20. The sealed semiconductor device according to claim 21, further comprising a die pad on which said semiconductor chip is mounted.

Claim 21. A sealed semiconductor device comprising:

a semiconductor chip;

a lead frame including internal leads extending across part of and spaced from a surface of said semiconductor chip; and

a tape including four tape members located at respective corners of said semiconductor chip, each tape member being disposed between said semiconductor chip and some of said internal leads, holding said semiconductor chip and said internal leads at a fixed distance from each other, each of said tape members having a first surface to which some of said internal leads are bonded and fixed, and a second surface in contact with but not adhered to the surface of said semiconductor chip, only a portion of the second surface of each of said tape members contacting the surface of said semiconductor chip.

Claim 22. A lead frame and tape for a sealed semiconductor device having a rectangular semiconductor chip sealed within an encapsulating resin, said lead frame and tape comprising:

internal leads extending toward and electrically connected with wires to respective pads located approximately along a central axis of the semiconductor chip; and

a tape including four tape members, each tape member having a first surface to which some of said internal leads are fixed, each of said tape members being arranged at a respective corner of the semiconductor chip so that a portion of a second surface of each of said tape members contacts but is not adhered to a surface of the semiconductor chip when the semiconductor chip is sealed within the encapsulating resin.

Claim 23. The sealed semiconductor device according to claim 21, wherein each of said tape members is disposed on the surface of said semiconductor chip so that a portion of each tape member protrudes beyond at least one edge of the surface of said semiconductor chip.

Claim 24. The lead frame and tape for a sealed semiconductor device according to claim 22, wherein each of said tape members is disposed on the surface of the semiconductor chip so that a portion of each tape member protrudes beyond at least one edge of the surface of the semiconductor chip.